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**THE IMPACT OF STRESS ON SOCIAL-EMOTIONAL COMPETENCE IN
CLINICALLY REFERRED CHILDREN**

by

NICHOLAS SEIVERT

DISSERTATION

Submitted to the Graduate School

of Wayne State University,

Detroit, Michigan

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

2018

MAJOR: PSYCHOLOGY (Clinical)

Approved by:

Advisor

Date

DEDICATION

I would like to dedicate my dissertation to my parents who have supported me throughout this journey. Their love and support allowed me to pursue my interest in clinical psychology and working to promote the mental health of children and families.

ACKNOWLEDGMENTS

I would like to acknowledge the support and guidance of my research advisor, Dr. Rita Casey. She has been instrumental in helping me to complete my dissertation and be successful throughout my pursuits in graduate school and beyond. I appreciate her care for my for my well-being, seeing me not just as a graduate student but as a person. I would also like to acknowledge the Blue Cross Blue Shield of Michigan Foundation (Grant # 002370.SAP) and the Wayne State University Graduate School and Department of Psychology for their generous support for the study.

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CHAPTER 1

Introduction

Stress has a negative impact on children's mental health, with the vast majority of stress research demonstrating increased internalizing (e.g., anxiety, depression) and externalizing (e.g., aggression) problems (Grant, McMahon, Carter, Carleton, Adam & Chen, 2014). Other important psychological outcomes, viewed from a positive rather than negative perspective, such as children's social-emotional competence, are rarely examined. The current project examines stress, which often impacts children's self-regulation, to see how it influences psychosocial outcomes, particularly in the social-emotional domain. In addition, this study compares children with ADHD, who by definition already struggle with self-regulation, to children with other clinical problems. Last, it examines the potential protective effects of parenting self-efficacy on the impact of stress.

Stress and Its Impact on Children's Mental Health

Stress includes "environmental events or chronic conditions that objectively threaten the physical and/or psychological health or well-being of individuals of a particular age in a particular society" (Grant, Compas, Stuhlmacher, Thurm, McMahon, & Halpert, 2003, p. 449). A key component of this definition is that the threatening events and/or conditions are contextual in nature, i.e., they originate from outside of the individual (Cohen, Kessler, & Gordon, 1995). The impact of these negative events is determined by multiple factors. Grant and colleagues (2014) proposed a model for understanding the impact of stress on mental health that contains several assumptions: a) stress contribute to mental health problems, b) there are moderating variables that influence the relation between stress and mental health problems, c) there are mediating variables that explain how stress causes mental health problems, d) in the relation among these previously

noted factors, there is some specificity, and e) relations among these factors are reciprocal and dynamic (see Figure 1).

There are two distinct methods for understanding the impact of stressful life events on psychological outcomes. One is to examine the effects of a specific type of stressful event (e.g. divorce, maltreatment) on outcomes, and the other is to look at the cumulative effect of stressful events (Evans, Li, & Whipple, 2013). Several research papers from the Adverse Childhood Experiences (ACEs) Study by Kaiser Permanente have demonstrated negative impact of accumulating multiple stressors during childhood on physical and psychological health in adulthood. Researchers identified seven ACEs that were assessed in a large sample of adults in a health maintenance organization (HMO) in southern California (Fellitti et al., 1998). This study of adverse experiences included the broad categories of abuse (physical, sexual, psychological) and household dysfunction (parental substance abuse, parental mental illness, domestic violence, and criminal behavior). Results indicated that approximately 50% of sample reported zero ACEs, 25% reported one ACE, and 25% reported two or more. There was a significant dose response relationship between ACEs and poorer health outcomes in adulthood including heart disease, cancer, chronic lung disease, bone fractures, and poorer self-reported overall health. In terms of mental health outcomes, individuals with greater ACE scores had increased risk for depression, suicide attempts, as well as substance use.

Another study of the ACEs cohort demonstrated that when emotional and physical neglect are included in the assessment along with abuse and household dysfunction, two thirds of the sample reported at least one ACE and having one ACE significantly increased the likelihood of having another (Dong et al., 2004). This illustrates the high co-occurrence of stressful life events in childhood. During the second wave of the study, in which questions on childhood emotional

and physical neglect were added, researchers found similar results to the first wave, including a significant dose response relationship for number of ACEs increasing likelihood of depression, suicide attempts, smoking, alcohol abuse, early sexual behavior, and teen pregnancy (Dong et al., 2005). They also found that ACEs were associated with the number of residential moves during childhood, further reflecting the environmental instability associated with experiencing these negative events. The ACEs studies illustrate that additive measurement of stressors has significant power and robustness of effects, and therefore, this method is worth examining as it relates to various health outcomes.

There are a few important considerations for interpreting the findings of these landmark studies. In terms of demographic variables, the entire sample was collected in Southern California and therefore is likely not representative of individuals from other parts of the country. Also, the racial/ethnic composition of the study sample is not representative of the overall population in the United States. Approximately 75% of respondents were White, 11% Hispanic/Latino, 7% Asian/Pacific Islander, and 5% Black/African American (Felliti et al., 1998). Nearly 50% of participants were age 60 years or older and nearly 65% had at least some college education. Therefore, this sample is not generalizable to racial/ethnic minorities and individuals with less education. Furthermore, it also considered a narrow set of events as adverse childhood experiences, which excludes other stressful events that can occur during childhood. Some have proposed an expanded view of adverse childhood experiences, taking into account the unique circumstances of low-income, urban-dwelling individuals including community violence, involvement in foster care, and peer victimization in addition to the conventional ACEs previously described (Cronholm et al., 2015). Lastly, the ACEs studies do not consider any potential immediate or short term impact of these events as they are experienced in childhood.

Several studies have demonstrated the deleterious effects of accumulating multiple stressful life events specifically on mental health during childhood. Many children in impoverished environments live with high levels of stress, and their likelihood of accumulating multiple stressors is particularly pathogenic (Evans, 2004). In children living with high levels of stress, imbalanced hormone levels and physiological arousal are theorized to be the primary mechanisms for social, emotional, and behavioral problems (Blair, 2010; Eisenberg, Spinard, & Eggum, 2010; Evans & Kim, 2007). Specifically, numerous studies have shown that stress increases youth's likelihood of having internalizing symptoms, such as depression and anxiety (Alva & de los Reyes, 1999, Hankin, Stone, & Wright, 2010; McLaughlin & Hatzenbuehler, 2009; see also Grant et al., 2003 for additional studies). There have also been some research findings that stress increases externalizing symptoms (e.g., delinquency, aggression) (Guerra, Tolan, Huesmann, VanAcker, & Eron, 1995; Shaw, Vondra, Homerding, Keenan, & Dunn, 1994), although these results are not as robust as are seen with internalizing symptoms (Grant et al., 2003).

Research on stress-exposed children often only examines internalizing and externalizing symptoms (Grant et al., 2014) and other child outcomes are less frequently examined. One study found that increased social risk factors, including poverty and mental health problems in family members, were associated with poorer academic achievement during middle school, with child's language skills and positive parenting relationship serving as protective factors (Burchinal, Roberts, Zeisel, & Rowley, 2008). A longitudinal study of teens found that lower family income, which can be considered a proxy for stress, predicted learned helplessness, self-regulation problems, and general distress (Evans, Gonnella, Marcynyszyn, Gentile, & Salpekar, 2005). Maltreated children, suffering a specific type of traumatic stress, have deficits in coping, emotion regulation, and behavioral self-regulation (Cicchetti & Toth, 2005). This research demonstrates

that stress has negative effects beyond just internalizing and externalizing symptoms. Therefore, other aspects of child development, such as potential decrements in social and emotional competence, are worthwhile in examining to see how they are influenced by stress.

Social-Emotional Competence

Social development and emotional development are intimately related (Saarni, Campos, Camras, & Witherington, 2006). To understand this, it is first important to define emotion. As noted by Campos, Frankel, and Camras (2004), there is no clear, widely agreed on definition of emotion. Saarni and colleagues (2006) propose a working definition of emotion based on the work of Campos and colleagues (2004): Emotion is “the person’s attempt or readiness to establish, maintain, or change the relation between the person and his or her changing circumstances, on matters of significance to that person” (Saarni et al., 2006, p. 227). Social cues from others also play an important role in the experience of emotion; this process begins at a very young age through the parent-child relationship. Hedonic principles and memory are also important components of emotion as well. Hedonic principles involve approach behavior for pleasurable stimuli and avoidance for painful stimuli. Memory compares current interactions with one’s environment to previous experiences and impacts perception and, therefore, action. Changes in muscle striation through the body are also important in the experience of emotion (Saarni et al., 2006). Feelings (e.g., joy, sadness, fear, anger), or the “irreducible quality of consciousness that accompanies” the evaluation or appraisal process previously described, are conceptualized as an important component of emotion, but not the same as emotion (Saarni et al., 2006, p. 228). It’s important to note that emotion is the result of the dynamic interaction of all of the system components, which also depend on developmental factors, such as cognitive development. This contrasts with the notion that emotion is following a set of instructions by an inherent control

system in either the environment or the organism itself (Witherington & Crichton, 2007). In short, emotion serves a functional purpose to motivate action, based on changing conditions in the self or environment.

Saarni and colleagues (2006) have defined emotional competence and identified eight key skills related to its development, based on their review of empirical research. Broadly defined, emotional competencies are the “skills necessary for self-efficacy in emotion-eliciting social interactions” (p. 250). Each of the eight competencies (Saarni, et al., 2006) are described briefly in the following paragraphs (see also Table 1).

The first emotional competency is awareness of one’s own emotional state. At the most basic level, this includes the ability of individuals to identify their own emotions. Increasing maturation allows for growing children and youth to understand the dynamics at play (e.g., environmental cues, memory) that influence their own emotional state, as well as better awareness of how others will respond to it. The second component is the ability to identify emotions in others. This skill is of particular importance, because it is highly related to independent ratings (e.g., by teachers, peers) of children’s social competence. For example, children who are more skilled at recognizing emotions in other people are typically rated as better in their social skills (Halberstadt, Denham, & Dunsmore, 2001). The process of identifying another person’s emotion involves several steps, including ability to read emotional cues of others (e.g. facial expressions, body language) as well as taking into account past experience, including knowledge of common elicitors of emotion that are typical in the larger social environment. The third skill is verbal abilities related to emotion expression. Verbal expression of emotion allows for mutual sharing with others, support seeking, and provides for the ability to influence the emotions of others. An individual’s capacity for empathetic and sympathetic involvement with others is the fourth social-

emotional competence skill. Sympathy refers to a person's ability to recognize and respond to another individual in a way that acknowledges that individual's emotional experience, whereas empathy involves a person's ability to vicariously experience the emotion of another.

An additional important emotional competency is the ability to differentiate between internal emotional experience and outward expression of emotion. This includes a person's ability to alter his or her emotionally expressive behavior based on perceived benefit of either expressing or inhibiting the expression of emotion. Coping adaptively with aversive emotions and distress is a related skill. A key component of this is emotion regulation, which is a person's ability to modulate his or her own emotional arousal and expression. This regulation is attempted in order to influence a person's own and other's responses toward some broad purpose. The purpose for this competency might be to reduce conflict, conform to the particular demands of a stressful environment, or move events toward a more positive outcome. This further illustrates the intimate link between emotions and social skills.

The seventh skill is the awareness of communication of emotion in relationships. Relationships are largely defined by how emotions are communicated; it includes knowledge of how to accurately convey emotion to others as well as discerning how much disclosure of emotion provides for the greatest social effectiveness. The final skill is an individual's ability to accept his or her own emotional experience, regardless of that experience's perceived valence and social context (i.e., positive vs. negative); this is also known as emotional self-efficacy. This is a superordinate skill that is built on all of the previously described skills. It is dependent on cognitive developmental level and likely not achieved until adolescence, as it requires a degree of self-awareness and abstract thinking beyond the capability of younger children.

The study of social competence in childhood often involves examination of children's effectiveness in social situations, which can be defined in many ways (Rose-Kransor, 1997). One definition is "the ability to achieve personal goals in social interaction while simultaneously maintaining positive relationships with others over time and across setting," (Rubin & Rose-Kransor, 1992, p. 285). There are various methods for assessing children's social competence, such as nomination by peers and evaluation of specific behaviors by observers such as teachers or parents. Rose-Kransor (1997) proposes a theoretical framework, The Social Competence Prism, that is helpful in understanding the various components of social competence in children. At the top of the prism is the theoretical level, which includes the overarching definition previously discussed involving children's social effectiveness and integrates all other components, further described below. The middle level is termed the index level, which is the transactional level of one's own goals and the social context in which one exists. This contains two components: the self, which involves one's own needs and priorities, and the other, which involves connectedness with others. At the base of the prism is the skill level which involves specific behaviors and motivations of individuals. Gresham & Elliot (2008) identified specific behavioral components of social competence skills to include communication, cooperation, assertion, responsibility, empathy, engagement, and self-control. Communication involves appropriately expressing to others one's wants, needs, and experiences. Cooperation is engaging collaboratively with other youth. Assertion includes youth standing up for themselves when it is adaptive to do so. Responsibility is youth being accountable for their actions. Empathy is sharing in the perceived emotion of another. Engagement involves youth's willingness to put themselves in social situations. Lastly, self-control requires children to be able to modulate their impulses. It is important to note that the Rose-Kransor (1997) Social Prism model emphasize the transactional

nature between each of the components previously discussed. That is to say that there is an ongoing feedback and interaction involved between an individual's social skills, his or her own motivation, wants, and needs, as well as the actions of others and the context in which the child exists.

Children who have deficits in these emotional competencies relative to the typical demands of their age level are also likely to have social difficulties. For example, Barth & Bastiani (1997) found that children who were biased toward incorrectly identifying their classmates' facial expressions as angry were rated as more hostile and less socially effective than their peers. This is consistent with Crick & Dodge's (1994) theory of hostile attribution bias observed in aggressive children. Emotional competence facilitates effectiveness in social relationships, hence the inextricable link between social and emotional development (Saarni et al., 2006).

Halberstadt and colleagues (2001) have integrated aspects of social and emotional competence into a singular model they call social affective competence. They define this construct as "the efficacious communication of one's own affect, one's successful interpretation and response to others' affective communication, and the awareness, acceptance, and management of one's own affect" (p. 80). The unique contribution of this model is the emphasis on the dynamic interactions among sending affective messages to others, receiving affective messages from others, and understanding one's own emotions. Given the inter-related nature of these two important aspects of development, the collective examination of these constructs is referred to as social-emotional competence.

Impact of Stress on Social-Emotional Competence

Research on the impact of stress on social-emotional competence has tended to focus on two areas: maltreatment and poverty. Pollock and colleagues (2000) observed that children with

specific types of traumatic stress, in their case, histories of maltreatment (i.e., abuse and neglect), were less accurate than non-maltreated children in identifying emotions of their peers. Specific stress experiences such as maltreatment construct the ways in which children view emotional expression and emotional states of others. This in turn influences their social relationships and social effectiveness (Saarni et al., 2006). There is also evidence that stress impacts children's ability to regulate their emotions. Children with a history of maltreatment have significant problems with emotion regulation compared to non-maltreated children (Shields & Cicchetti, 1997). There is also research demonstrating the negative effect of poverty on emotions, which negatively impacts children's ability to identify emotions in others and regulate their own emotions (Evans, 2004). Food insecurity, which is associated with poverty, has also been observed to have a negative impact on children's social skills (Jyoti, Frongillo, & Jones, 2005). However, less research has been done that more directly examines the impact of accumulation of stress on social and emotional development.

Social-Emotional Competence in Clinical Child Populations

Children with clinically significant mental health problems have deficits in social-emotional competence. In a review, Southam-Garrow & Kendall (2002) argue that social-emotional competence is an important concept that is not well integrated into psychological treatment for children. They highlight studies illustrating that children with mental health problems are generally more likely to have deficits in emotion understanding and emotion regulation, which they assert are the most clinically relevant aspects of social-emotional competence. Some scholars maintain that emotion understanding is especially important, particularly in more complex social situations, as children may be better able to use adaptive coping strategies when they have an awareness of their emotion and emotions of others (Suveg,

Southam-Gerow, Goodman, & Kendall, 2007). Despite these interesting proposals, there has been a relative paucity of emotion understanding research in clinical child populations, compared to emotion regulation research with such youth (Beauchaine, 2015; Southam-Gerow & Kendall, 2002).

With respect to emotion understanding, one study found that children with disruptive behavior disorders were less able to accurately recall their own reactions to praise compared to a nonclinical sample and a sample of depressed children (Casey, 1996). Another rare study observed that adolescent girls with bulimia-nervosa had lower understanding of their own emotions compared to matched depressed girls and community samples (Sim & Zeman, 2004). Researchers have found that an emotion-focused cognitive-behavioral intervention for anxious youth increased their emotion understanding (Suveg, Kendall, Comer, & Robin, 2006). In addition, a measure to assess emotion understanding in children has been developed (Penza-Clyve & Zeman, 2002), yet scarcity of research in this domain persists.

Emotion regulation is a core deficit that has been observed in various types of child psychopathology (Beauchaine, 2015). Beauchaine and colleagues (2007) argue that in most all forms of mental illness seen in childhood, both internalizing and externalizing; one or more negative emotions (e.g., sadness, anger, fear) occurs too enduringly or too intensely. Specific examples of this include studies that show children with anxiety (Southam-Gerow & Kendall, 2000) and depression (Garber, Braafladt, and Weiss, 1995) show poorer emotion regulation than non-disordered children.

There has also been a fair amount of research on emotional problems seen specifically in children with Attention-Deficit Hyperactivity Disorder (ADHD). That disorder, found in about 5% of children (Polanczyk & Rhode, 2007), is one of the most common behavioral disorders in

childhood, typically treated in general pediatric and mental health clinics (American Academy of Pediatrics, 2011). The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), defines ADHD as “a persistent pattern of inattention and/or hyperactivity/impulsivity that interferes with functioning or development” (American Psychiatric Association, 2013). Symptoms of ADHD emerge before age 12 and influence behavior across more than one setting. The core deficit is theorized to be a weakness in response inhibition (Barkley, 2006), with such children having difficulty stopping, halting, or moderating their urges or desires. Learning self-regulation, a key aspect of healthy development, is a struggle for children with ADHD.

Children with ADHD are at greater risk for having deficits in social-emotional competence than children who do not have ADHD (Casey & Schlosser, 1996; Musser, Backs, Schmitt, Ablow, Measelle, & Nigg, 2011). Children with ADHD often demonstrate significant externalizing behavior problems (e.g. aggression, hyperactivity), and internalizing symptoms (e.g. depression, anxiety) as well, much more than ordinary children (Yoshimasu et al., 2012). Children with ADHD also have significant emotion regulation problems compared to typically developing peers (Musser et al., 2011; Walcott & Landau, 2004). In addition, children with ADHD are less able than their non-disordered peers to accurately identify emotions in themselves and other children (Da Fonseca, Segulier, Santos, Poinso, & Deruelle, 2009; Norvilitis, Casey, Brooklier, & Bonello, 2000; Pelc, Kornreich, Foisy, & Dan, 2006; Yuill & Lyon, 2007). They also are likely to have poor social skills, tending to have fewer friends, more conflict with peers, and more peer rejection (Bagwell, Molina, Pelham, & Hoza, 2001; Gentschel & McLaughlin, 2000).

Psychosocial problems observed in children with ADHD and those living in high stress environments are theoretically linked to deficits in self-regulation. In ADHD, the source of these deficits is primarily related to neurobiology (Barkley, 2006). In children living with high levels

of stress, imbalanced hormone levels and physiological arousal are theorized to be the primary mechanisms for their psychosocial problems (Blair, 2010; Evans et al., 2005; Evans & Kim, 2007). Children with ADHD who are living with significant stress are likely to have more severe behavior problems than their unstressed peers (Ford et al., 1999; Ford & Connor, 2009). However, stress and ADHD as they relate to child social-emotional competence have rarely been studied together, despite a presumed common deficiency in self-regulation. It could be valuable to examine potential problems in the social-emotional domain that are associated with children who have ADHD and experience high stress compared to highly stressed children who have other clinical problems. The compounding self-regulation problems caused by comorbid stress and ADHD are presumed to exacerbate difficulties for these youth, compared to children with other clinical problems. Examining stress and social-emotional problems in these youth could help to elucidate whether the theoretical common link of self-regulation deficits, in fact, explains the psychosocial problems.

Parenting, Social-Emotional Competence, and Stress

Parenting plays an important role in children's development of social-emotional competence. Children learn social-emotional skills from their parents beginning at a very young age (Saarni et al., 2006). In a longitudinal study, Eisenberg and colleagues (2005) found that higher parental competence during pre-adolescence predicted lower levels of child externalizing problems for those youth during adolescence. Parenting competence as it relates to child social-emotional skill includes parental behaviors such as encouraging children to express their emotions, not minimizing children's emotional experience, and parents generally being more aware of their children's emotional experience (Gottman, Katz, & Hooven, 1996). Parent's stress has been linked to poorer social-emotional skills in their children (Guajardo, Snyder, & Petersen, 2009). Among

children who are not clinically referred, parental competence can reduce or halt the negative impact of stress on children's emotional and behavioral outcomes (Brody, Flor, & Gibson, 1999; Leventhal & Brooks-Gunn, 2000). Parent self-efficacy, including satisfaction and confidence in parenting skill, is highly related to competence in parenting (Johnston & Mash, 1989; Jones & Prinz, 2005). Thus, parent self-efficacy is likely important to the well-being of stress-exposed children and has the potential to reduce the negative effects of stress in children with mental health problems.

Current Study

The current study examines social-emotional competence in clinically referred children. Despite high rates of stress seen in children getting mental health services in urban outpatient facilities, little is known about how accumulation of stressful life events affects social-emotional competence of clinically referred youth. The current study investigates the impact of stress on these children, comparing in particular children with ADHD to children who have other clinical problems. The mechanism of stress that negatively influences children's psychosocial outcomes is theorized to be a deficit in self-regulation (Blair, 2010; Evans et al., 2005; Evans & Kim, 2007). Self-regulation is a core deficit in children with ADHD (Barkley, 2006). Therefore, due to their experience of stress, clinically referred children with ADHD are hypothesized to show greater social-emotional skills deficits than are seen among children with other clinical problems. Parent self-efficacy is also hypothesized to serve as a factor that protects children against the negative effects of stress on children's social-emotional skills, such that greater parent self-efficacy will theoretically diminish the negative effects of stress on the social-emotional skills of their offspring. Data were collected at two urban outpatient mental health clinics and one urban pediatric primary care clinic. Children and parents reported on stress as well as social-emotional outcomes.

CHAPTER 2

Method

Participants

Participants were a clinical sample of 42 parent-child dyads recruited from three sites in Southeastern Michigan: a community mental health center providing comprehensive outpatient services ($n = 30$), a university training clinic for its doctoral program in clinical psychology ($n = 9$), and a pediatric primary care clinic ($n = 3$). The community mental health center and primary care clinic serve primarily urban, low socioeconomic status, African American youth and families, with most having Medicaid insurance. The training clinic serves a wider array of clients with low to middle incomes from urban and suburban areas and diverse ethnic backgrounds, some of whom may lack insurance. Fees at this clinic are on a sliding scale based on income and no insurance is accepted.

Demographic characteristics (See Table 2) are as follows: 64.3% male, 78.6% Black/African American, 11.9% White/Caucasian, 7.1% Biracial/multiracial, and 2.4% Arab/Middle Eastern. The mean age was 9.9 years ($SD = 1.4$). The average time in treatment was 18.6 months ($SD = 18.4$) with a range of not yet being involved in treatment to being involved in treatment for 4 years, 9 months. The most common physical health problems reported for the children were asthma (26.2%) and seasonal allergies (40.5%). One child was previously treated for tumors in nerve cells around the eye (neuroblastoma-opsoclonus myoclonus ataxia syndrome). Per review of their medical charts, 64% of the child participants were prescribed psychiatric medication and 62% were in psychotherapy at the time of assessment. As for diagnoses, 38% of children were diagnosed with ADHD-Combined Presentation, 7% with ADHD-Inattentive, and 21% with ADHD-Unspecified. In total, about two-thirds of the sample had an ADHD diagnosis.

Other common diagnoses included Oppositional Defiant Disorder (38%), Learning Disability (19%), and Generalized Anxiety Disorder/Unspecified Anxiety Disorder (12%). In terms of trauma or stressor-related disorders, three children (7.1%) were diagnosed with Adjustment Disorder, one child (2.4%) was diagnosed with Post-Traumatic Stress Disorder, and one child (2.4%) had a diagnosis of neglect. Several children carried more than one diagnosis.

In terms of parental employment, 38.1% reported being unemployed, 31% employed full time, 19% part time, 7.1% were students, and 4.8% were retired. As for household income, 26.2% of families reported an annual income of \$8000 per year or less, 26.2% reported making between \$8,000-20,000 per year, 19% made \$20,001-30,000, 9.5% made \$30,001-50,000, and 19% made greater than \$50,000. Many parents (76.2%) reported that their child received free or reduced price lunches at school. Medicaid was the most common type of insurance coverage for participating families (78.6%). The majority of parents (52.4%) reported that either they or another caregiver of the child had a mental health problem.

Inclusion criteria for child participants were a) must be receiving mental health services, b) age 8 up to 12 years, c) having at least one primary caregiver participating, and d) English speaking. Exclusion criteria include a diagnosis of autism spectrum disorder, intellectual disability, or symptoms of psychosis. The project was funded by student research grants provided by the Wayne State University Graduate School and Department of Psychology, as well as the Blue Cross Blue Shield Foundation of Michigan. Data were collected at the site in which child participants received clinical services. Consent from parents or guardians and assent from their children were obtained as required and approved by the Wayne State University IRB. Initially, participating families were compensated with a \$20 gift card to a local department store. The incentive was later increased to \$40 per family in an effort to increase the rate of recruitment.

Design

The study design was cross-sectional, gathering all data from each family at one time, taking approximately 1-1.5 hours per family. Guided by the research aims, data analyses were conducted primarily through multiple regression and MANOVA. Based on previous research on stress, ADHD, social-emotional competence, and parenting, a medium effect ($d = .50$) was expected (Blair, 2010; DaFonseca et al., 2009; Grant et al., 2014; Kim, Conger, Elder, & Lorenz, 2003; Leventhal & Brooks-Gunn, 2000). To detect a medium effect for stress predicting the social-emotional outcomes with one predictor in the model at a power of .80 at $p < .05$ requires a sample size of 55 (*G*Power Program*, Erdfelder, Faul, & Buchner, 1996). If a covariate were added to the model (i.e. two predictor variables) then a sample size of 68 would be needed to achieve a power of .80 at $p < .05$. For the group differences analyses (ADHD vs. non-ADHD) including a covariate, a sample size of 67 is required with a medium effect size, power of .80 at $p < .05$.

In terms of actual power with the current sample size ($N=42$), a power of .69 at $p < .05$ was achieved for the regression analyses without a covariate, a power of .58 at $p < .05$ was achieved for the regression analyses with a covariate, a power of .60 at $p < .05$ was achieved for the group differences analyses without a covariate, and a power of .50 at $p < .05$ was achieved for the group differences analyses with a covariate. Institutional difficulties led to some problems with recruitment at the pediatric primary care clinic. Getting research assistants the appropriate permissions to recruit at the clinics posed significant difficulty and took much more time than anticipated. Furthermore at that site, there were fewer children eligible for the study that researchers had access to recruiting than initially anticipated.

Descriptive Measures

Background information. Age, gender, and race/ethnicity were taken from clinical records of participants (see Appendix B. Chart Review Form). Parents reported on their children's prior treatment for psychological problems. Also, parents were asked to state when participants began clinical services and the length and types of treatment. Family income, household structure, and history of mental illness were also asked (see Appendix B. Background Form).

Receptive vocabulary. The Peabody Picture Vocabulary Test, Fourth Edition (PPVT-4; Dunn & Dunn, 2007), a measure of receptive vocabulary, was administered to all children in the study. On this measure, the administrator states a word and the child subsequently picks which one of four pictures best illustrates that word. Children's receptive vocabulary scores are greatly associated with overall general intelligence (Hodapp & Gerken, 1999) and thus were used to estimate cognitive abilities. This score was examined as potential covariate for statistical analyses, as higher cognitive abilities have been associated with greater social-emotional competence in clinical child samples (Buitelaar, van der Wees, Swaab-Barneveld, & van der Gaag, 1999). The mean PPVT score for the current sample was a standard score of 96.7 (SD = 17.4), which falls in the average range.

Measures of Key Study Variables

Child diagnoses. Each child's mental health diagnoses were determined through a chart review, completed by research staff, of formal diagnoses found in their records at each of the institutions (see Appendix B. Chart Review Form). At the community mental health center, all diagnoses were made by a child psychiatrist ($n = 30$), at the psychology training clinic, all diagnoses were made by a psychological assessment by a trainee supervised by a psychologist ($n = 9$), at the pediatric primary care clinic, two of the participants' diagnoses were made by a

pediatrician and one was made through the psychological assessment by a graduate student trainee supervised by a psychologist.

Parents also completed the Vanderbilt ADHD Rating Scale (Bard, Wolraich, Neas, Doffing, & Beck, 2013), which has shown good validity and reliability for assessing both inattentive and hyperactive/impulsive symptoms. This scale is published by the American Academy of Pediatrics and is commonly used by physicians (i.e., pediatricians and child psychiatrists) to assist in making ADHD diagnoses. The items on the measure parallel DSM-5 diagnostic criteria. The Vanderbilt scale was used as a check on ADHD diagnoses from the chart review. In terms of consistency, the Vanderbilt correctly identified the diagnosis of having ADHD 64% of the time and not having ADHD 54% of the time. It is important to note that more than just parent report on Vanderbilt rating scales were needed in order to make an ADHD diagnosis, as it was just one piece of a thorough diagnostic assessment. Also, since the majority of children in the study were in some sort of treatment, it is possible that symptoms had been reduced as a result of treatment and thus were an influence on the parent rating forms. Given the likelihood of reliability of the chart review diagnoses, those diagnoses were used for the purposes of the study as much as possible.

Children's stress. Children's stress was the primary independent variable, which was assessed via parent report using the Life Events and Circumstances Checklist (LECC; Work Cowen, Parker, & Wyman, 1990). This 30-item parent report measure contains questions regarding their child's exposure to both discrete stressful events (e.g. death of a family member) and chronic stressors (e.g. ongoing family problems). It has five subscales, including Family Turmoil, Poverty, Family Separation/Social Services, Family Illness/Injury, and Unsafe/Neighborhood Violence. The measure has been validated using factor analysis in a sample

of urban, low-income families (Kilmer, Cowen, Wyman, Work, & Magnus, 1998). This measure was selected given the similarity of the current sample to the sample in which the measure was developed, as well as the fact that it examined factors beyond what has been previously used to measure adverse life experiences in childhood. It captures common stressors experienced by low-income, urban youth. Higher scores on this measure have been associated with greater externalizing behavior problems (Youngstrom, Weist, & Albus, 2003) and higher allostatic load levels (i.e., a cumulative physiological measure of risk) (Evans, Kim, Ting, Tesher, & Shannis, 2007). Reliability of the measure for the current project was good ($\alpha = .88$). A total count of endorsed items was used for the purposes of the current study.

In addition to the stress measure, parents completed the Life Events Checklist-5 (Weathers, Blake, Schnurr, Kaloupek, Marx, & Keane, 2013), to provide measures of parent and child exposure to serious traumatic events. This measure has demonstrated adequate reliability and validity in a sample of adults (Gray, Litz, Hsu, & Lombardo, 2004). Although this measure has not previously been used with children, the traumatic events described in the measure are also applicable to this population. Given that this is not a primary outcome measure and no brief, parent-report measures of child trauma exposure exist for this age group, this measure was used to determine child trauma exposure. Parents completed one form of this measure for themselves (based on their personal experience) and one form for their child (based on their child's experience). The measure contains a series of 17 traumatic events (e.g., physical assault, sexual assault, exposure to toxic substance) that are rated as Happened to Me, Witnessed It, Learned About It, Part of My Job, Not Sure, or Doesn't Apply.

Prior to the completion of each participant visit, parent responses to the child measure were screened by the research staff for endorsement of items consistent with a suspicion of child abuse

or neglect. If items were endorsed causing this suspicion, the research staff running the visit followed up with the parent for more information. If it was determined there was reasonable suspicion, the researcher reviewed the child's records at the site in which they were receiving services for documentation of reporting of the event to Child Protective Services. All cases where there was a reasonable suspicion of abuse or neglect occurred at the community mental health center and chart records indicated that reports to the authorities had already been made. This is understandable given that a trauma screening is part of the general intake process at this site, so any suspicion of child abuse or neglect would have already been raised prior to families meeting with research staff. Approximately one in five parents ($n = 9$) indicated that their children had suffered a physical assault and 5% ($n = 2$) of parents indicated their child experienced a sexual assault or unwanted sexual experience. As for parent report of their own traumatic experiences, 43% reported a history of physical assault and 35% of parents reported a sexual assault or unwanted sexual experience.

Parent self-efficacy. Parent self-efficacy was measured with the Parenting Sense of Competence Scale (PSOC; Johnston & Mash, 1989). This 16-item measure asks parents to report on their satisfaction with parenting and degree of confidence in their parenting skills on a scale of 1 to 6 (strongly agree to strongly disagree). Sample items include "Being a parent is manageable, and any problems are easily solved" and "Being a parent makes me tense and anxious." This measure has been shown to have good validity and reliability in community samples (Gilmore & Cuskelly, 2009; Johnston & Mash, 1989) and has also been used with urban, low-income, minority parents, demonstrating adequate reliability (Black, Dubowitz, & Starr, 1999; Zuravin & Fontanella, 1999). Higher scores indicate greater parental self-efficacy on this measure and have been associated with reduced severity of ADHD symptoms (Anastopoulos, Shelton, DuPaul, &

Guevremont, 1993) and reduced conduct problems (Sanders, Markie-Dadds, Tully, & Bor, 2000). Reliability of the measure for the current project was adequate ($\alpha = .78$). The total score for each participant was calculated for use in the current study.

Emotional competence. Two components of emotional competence were measured: emotion recognition and emotion regulation.

Emotion recognition. First, emotion recognition was assessed by the Diagnostic Analysis of Nonverbal Behavior 2 (DANVA 2; Nowicki & Duke, 1994), a computerized task in which children are given a series of a) pictures of children's faces and b) children's voices, and are asked to select the correct emotion being presented from a set of choices (happy, sad, fearful, angry). This instrument has demonstrated validity and reliability with children (Nowicki & Duke, 1994; Rothman & Nowicki, 2004) and has been used previously with populations similar to the current study, including boys with severe emotional disturbances (Cooley & Triemer, 2002). Research staff administered the DANVA to the children via laptop computer at the study sites. The total correct for the faces and voices were each examined separately in the current study. Reliability of the faces measure for the current project was somewhat low ($\alpha = .56$). Reliability of the voices measure for the current project was poor ($\alpha = .09$).

Emotion regulation. A second aspect of emotional competence was a parent report of their child's emotion regulation and emotional negativity, using the Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997). This 24-item instrument contains two subscales: Emotion Regulation and Emotional Lability/Negativity, and has demonstrated good reliability and validity (Shields & Cicchetti, 1997). For this measure, the Emotion Regulation subscale is conceptualized as "situationally appropriate affective displays, empathy, and emotional self-awareness," with higher scores associated with more positive, adaptive emotion regulation capacities. The

Emotional Lability/Negativity subscale is conceptualized as “lack of flexibility, mood lability, and dysregulated negative affect” (Shields & Cicchetti, 1997, p. 910) and higher scores are associated with poorer functioning in terms of the ability to control emotional responses. Items are rated on a Likert-type scale ranging from 1-4 (1 = rarely/never, 4 = almost always). For the current study, each scale was examined separately. Reliability of the measure for the adaptive Emotion Regulation scale was adequate ($\alpha = .77$) and the Emotional Lability/Negativity scale was good ($\alpha = .89$).

Social competence. Social competence was assessed from two sources. Parents reported their children’s social skills, and children reported on their own perceived social competence.

Parent report. The parent report used the Social Skills Improvement System (SSIS) Rating Scale (Gresham & Elliott, 2008). Parents were asked to respond to a series of questions regarding their children’s social functioning on a four-point scale (never to almost always). Sample items include “Takes turns,” “Follows directions,” and “Interacts well with other children.” The measure includes subscales tapping Communication, Cooperation, Assertion, Responsibility, Empathy, Engagement, and Self-Control. The subscale scores combined make up a broad Social Skills scaled score, which is the single index from this instrument that was used in this project. Greater scores indicate better social skills. The broad Social Skills measure has demonstrated good reliability and validity in a representative sample matched to race/ethnicity, geographic region, and socioeconomic status (Gresham & Elliott, 2008).

Child report. Children’s own evaluation of their social skills was assessed via the Social subscale of the highly valid and reliable Self-Perception Profile for Children, which asks children to evaluate their self-perceived competence in the social domain (Harter, 2012). Items provide four response options based on the degree to which the child identifies with each statement (e.g. “Some

kids find it hard to make friends BUT Other kids find it pretty easy to make friends”). Higher scores indicate greater social competence. Research staff read each item aloud and recorded children’s responses as children are shown the items. Reliability of the measure with the current project was good ($\alpha = .87$).

Procedure

Research staff recruited participants at the sites through one of two methods. In one method used for all sites, researchers informed clinicians of the study inclusion criteria and asked clinicians for recommendations of youth and families who are eligible. Researchers then approached families identified as possible participants by the clinic staff, at one of their clinic appointments (either before or after the appointment, as was best suited to the time available) or contacted the families with their permission by clinician providing contact information. The researchers then briefly described the study to the parents and their children, and asked if they would like to participate. If a family agreed, researchers arranged a time to meet the family at their respective clinic site, to collect study data. At the training clinic site, researchers also conducted a chart review to determine eligible families that had been seen at the clinic in the previous three years. Researchers then sent out a letter to families letting them know researchers identified them as eligible for the study. The letter alerted them that they would be contacted a few weeks after receiving the letter to assess their interest in participating and schedule a time if interested. The letter also provided families a way of opting out of being contacted by the study recruiters by calling the clinic and expressing a desire to be removed from the contact list.

Data collection typically took between 1-1.5 hours per family. First, parental consent and youth assent were obtained. Parents then completed paper-and-pencil study measures separately from their children, who completed all measures with the assistance of research staff, in a separate

room at the facility. Given the questions on the trauma screening measure (LEC-5), suspicion of child abuse could occur based on parental responses to the trauma measure. Prior to completion of data collection with each family, the data they provide were screened for endorsement of items consistent with suspicion of child abuse. If items are endorsed, research staff followed up with the parent for further information and to determine if suspicion of child abuse is present, per the procedure previously described.

After data were collected, they were entered into a research database and stored the research space assigned to the researcher's faculty mentor. All data were de-identified with participant families each being assigned a unique identification number, and a password protected master participant list was kept on a separate drive and stored away from the data.

Hypotheses

Hypothesis 1. Among these clinically referred children, higher scores on a measure of children's stress will predict poorer social-emotional competence.

Child stress was operationalized as the total number of parent-endorsed items on the Life Events and Circumstances Checklist (LECC: Work, Cowen, Parker, & Wyman, 1990). Several aspects of social-emotional competence were examined as outcome variables, each in different statistical models: a) total correct for faces and b) voices on the children's emotion recognition task (DANVA 2; Nowicki & Duke, 1994), c) parent-report of children's emotion regulation, and d) emotional negativity/lability via the Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997), e) the Social Competence subscale score on the child-report of Self-Perception Profile for Children (Harter, 2012), and, f) parent-report of their children's social skills via the total score on the broad Social Skills scale, of the Social Skills Improvement System (SSIS) Rating Scale (Gresham & Elliott, 2008).

Many children in impoverished environments live with high levels of stress; the accumulation of multiple stressors being particularly pathogenic (Evans, 2004). Research on stress-exposed children often examines only a single type of stress or only internalizing and externalizing behavior problems (Grant et al., 2014); other child outcomes are less frequently examined. One longitudinal study of teens found that lower family income predicted learned helplessness, self-regulation problems, and general distress (Evans et al., 2005). Maltreated children, suffering a specific type of traumatic stress, have deficits in coping, affect regulation, and behavioral self-regulation (Cicchetti & Toth, 2005). Those findings demonstrate that stress has negative effects on children that are observable beyond their internalizing and externalizing symptoms.

Hypothesis 2. Children with a diagnosis of ADHD will have poorer social-emotional competence than children with other clinical problems.

Clinical diagnoses was operationalized as the diagnostic information gathered via chart review of the participant's clinic records at each site. Children with an ADHD diagnosis were classified as belonging to the ADHD group for purposes of this project, regardless of any existing comorbid diagnoses, other than those described in the exclusion criteria above. Children with all other clinical problems (e.g., depression, anxiety) as determined by chart review (again, with the exception of exclusion criteria described previously), were categorized into the second group, the Non-ADHD group. The two groups were compared on mean levels of the previously described social-emotional competence outcome variables: a) emotion recognition of faces and voices, b) emotion regulation and negative emotionality, and c) child perceived social competence and parent report of child social skill.

Children with ADHD often demonstrate significant externalizing behavior problems (e.g. aggression, hyperactivity), and also internalizing symptoms (e.g. depression, anxiety) as well, compared to ordinary children (Yoshimasu, et al., 2012). In addition, children with ADHD are at greater risk for having social and emotional skill deficits (Casey & Schlosser, 1996; Musser et al., 2011). Several important factors determine a child's level of competence in the area of emotion, including skill at reading the emotions of others and regulating their own emotions (Saarni et al., 2006). Children with ADHD are less able than their peers to accurately identify emotions in other children (Da Fonseca et al., 2009; Pelc et al., 2006; Yuill & Lyon, 2007). They also tend to have fewer friends, more conflict, and more peer rejection (Bagwell et al., 2001; Gentschel & McLaughlin, 2000). These results have been found when children with ADHD are compared to non-clinical samples. Thus, similar results were expected when comparing children with ADHD to children with other clinical problems in the social-emotional domains.

Hypothesis 3. Stress will have a greater negative impact on the social-emotional competence of children with ADHD compared to children with other clinical problems.

As with Hypothesis 2, children were categorized into either the ADHD or Non-ADHD group as described above. The two groups were compared on mean levels of the previously described social-emotional competence outcome variables: a) emotion recognition (faces and voices), b) emotion regulation and emotional lability/negativity, and c) child and parent reports of child social skills. Again, stress was operationalized via total number of endorsed items on the parent report of child stress (LECC; Work, Cowen, Parker, & Wyman, 1999).

Learning self-regulation, a key aspect of healthy development, is a struggle for children with ADHD. Youth with high levels of stress also struggle with self-regulation deficits (Evans et al, 2005). Children with ADHD who live with significant stress are likely to have more severe

emotional and behavioral problems than unstressed children (Ford et al., 1999; Ford & Connor, 2009). However, stress and ADHD, as they relate to child social and emotional outcomes, have rarely been studied together, despite the common deficiency in self-regulation. It could be valuable to examine potential problems in social and emotional domains associated with ADHD and high stress, given their demonstrated deficits (Casey & Schlosser, 1996; Musser, et al., 2011).

Hypothesis 4. Greater parental self-efficacy will be associated with reduced negative effects of stress on social-emotional competence in clinically referred children.

Parental self-efficacy was operationalized as the total score on the Parenting Sense of Competence Scale (PSOC; Johnston & Mash, 1989). As previously described, stress was defined via parent report of child stress (LECC) and social-emotional competences variables were the previously noted social-emotional measures (emotion recognition for faces and voices, emotion regulation and emotional lability/negativity, child perceived social competence, parent-report of social skills).

Parenting plays an important role in children's development of social-emotional competence (Eisenberg et al., 2005; Saarni et al., 2006). Parental competence can reduce or halt the negative impact of stress on children who are not clinically referred (Brody, Flor, & Gibson, 1999; Leventhal & Brooks-Gunn, 2000). Parent self-efficacy, including satisfaction and confidence in parenting skill, is highly related to competence in parenting (Jones & Prinz, 2005; Johnston & Mash, 1989). Thus parent self-efficacy is likely important to the well-being of stress-exposed children.

CHAPTER 3

Results

Preliminary Analyses

Of the 42 participants, 9 had missing data from study variables. All missing variables came from parent report measures and were a result of a) not having one of the measures when data collection began (SSIS, $n = 3$), b) parents reporting that they would finish the measure at home and return it but not following through with this (SSIS, $n = 2$), c) parents skipping too many items so measure was not scorable (ERC $n = 3$), and d) missing a page when participant packets were compiled (Parent Report of Child Stress, $n = 1$). Chi-square tests comparing those with and without missing data from these measures indicated that there were no systematic associations with race/ethnicity ($X^2 = 1.508, p = .68$), sex ($X^2 = 0.187, p = .67$), or site ($X^2 = 2.371, p = .45$). MANOVA demonstrated no systematic difference between those with and without missing data on potential covariates of Child Age [$F(1, 39) = 0.008, p = .931$], Child PPVT Score [$F(1, 39) = 1.067, p = .308$], and Time in Tx [$F(1, 39) = 0.227, p = .636$]. Although group sample sizes for these analyses were not roughly equal as is an assumption with MANOVA, homogeneity of variance-covariance matrices were satisfactory, as indicated by Box's M. Due to the lack of significant findings, missing data points for these measures were treated as random.

For all of the previously discussed variables, missing data were imputed via SPSS Missing Value Analysis Expectation Maximization (EM) method. This method assumes data were missing at random and is preferable to other methods of imputing missing values because it introduces less bias into the imputed data (Roth, 1994). Correlations were run with Child Age, Child PPVT score, and Time in Treatment with all continuous key variables to determine if they should be considered as covariates (see Table 4). No significant correlations were found between Child Age and any

outcome measures. There was a significant correlation between Child PPVT score and DANVA Voices Total Score ($r = .502, p = .001$). Therefore, Child PPVT score was used as a covariate in analyses with DANVA Voices Total Score. Significant correlations were found for Time in Treatment and the following variables: DANVA Voices Total Score ($r = -.337, p = .029$), Emotion Regulation ($r = -.395, p = .010$), and Emotional Lability/Negativity ($r = .337, p = .029$). Given the direction of the correlations, the Time in Treatment variable is likely acting as an indicator of symptom severity, as children with more severe problems are likely in treatment for longer periods of time and are more likely to have poorer outcomes. Given this information, analyses involving the variables DANVA Voices Total, Emotion Regulation, and Emotional Lability/Negativity were run both with and without Time in Treatment as covariates. For all of the statistical analyses discussed in the following sections, assumptions of analyses were tested and met unless otherwise indicated. It is important to note that the DANVA Voices variable had poor reliability; analyses with this variable were run for exploratory purposes and interpretation should be done with this in mind. Table 5 contains a summary of noteworthy findings and Table 6 contains the means and standard deviations for variables that are part of these findings.

Effects of Stress on Social-Emotional Competence

Multiple regressions were conducted with Child Stress as the predictor variable and each of the social-emotional competence variables previously described as criterion variables in separate models.

Hypothesis 1 A and B: Greater child stress predicting poorer emotion recognition.

The model of Child Stress predicting Emotion Recognition-Faces was not significant ($R^2 = .022, b = -.150, p = .344$), showing no significant relation between the parent report of stress and children's ability to recognize emotions in pictures of children's faces. The model of Child Stress

predicting Emotion Recognition-Voices including PPVT Score as a covariate was not significant ($R^2 = .253$, $b = .013$, $p = .925$), showing that there was no relation between children's stress and their ability to recognize emotions in recordings of children's voices, when controlling for their verbal abilities. The model of Child Stress predicting Emotion Recognition-Voices, including PPVT Score and Time in Treatment as covariates was not significant ($R^2 = .334$, $b = .071$, $p = .603$), showing that there was no relation between children's stress and their ability to recognize emotions in recordings of children's voices, when controlling for their verbal abilities and time in treatment.

Hypothesis 1 C and D: Greater child stress predicting poorer emotion regulation and greater emotional lability/negativity. The model of Child Stress predicting Emotion Regulation was not significant ($R^2 = .025$, $b = -.157$, $p = .322$), indicating that child stress was not related to children's ability to regulate their emotions adaptively. The model of Child Stress predicting Emotion Regulation with Time in Treatment was not significant ($R^2 = .163$, $b = -.087$, $p = .562$), showing no significant relation between child stress and children's emotion regulation when considering time in treatment. The model of Child Stress predicting Emotional Lability/Negativity approached significance ($R^2 = .082$, $b = .287$, $p = .066$), which could suggest that greater parent report of child stress may be associated with greater display of negative emotions in children. The model of Child Stress predicting Emotion Lability/Negativity with Time in Treatment was not significant ($R^2 = .166$, $b = .233$, $p = .126$), which could suggest that when time in treatment is controlled for, the stress children experiences is not predictive of their emotional lability.

Hypothesis 1 E and F: Greater child stress predicting poorer child perceived social competence and parent report of social skills. The model of Child Stress predicting Child Perceived Social Competence was not significant ($R^2 = .033$, $b = .182$, $p = .249$). The model of

Child Stress predicting Parent Report of Child Social Skills was not significant ($R^2 = .038$, $b = -.196$, $p = .214$). Overall, effects of child stress on child's social skills were not observed in either the parent report or child self-report.

ADHD and Social-Emotional Competence

The potential impact of having an ADHD diagnosis on social-emotional competence was measured through ANOVA/MANOVA and ANCOVA/MANCOVA. Group assignment served as the independent variable (IV) for each analysis, comparing children diagnosed with ADHD ($n = 28$) to children without this diagnosis ($n = 14$). For each of the analyses noted below, violation of roughly equal sample size assumption occurred but homogeneity of variance-covariance matrices were satisfactory, as indicated by Box's M.

Hypothesis 2A: ADHD diagnosis predicting poorer emotion recognition. Given the poor reliability of the DANVA Voices measure, the DANVA Faces and Voices measures were examined in separate analyses. The ANOVA model looking at group differences on the DANVA Faces measure was not significant [$F(1, 40) = 2.450$, $p = .125$] indicating that scores for children with ADHD compared to those without this diagnosis did not differ in terms of their ability to recognize emotions in children's faces. The ANOVA model examining group differences on the DANVA Voices measure including PPVT score as a covariate was not significant [$F(1, 40) = 0.097$, $p = .757$]. This suggests that there were no group differences between children with and without ADHD in terms of their ability to recognize emotions in children's voices, controlling for their verbal abilities. The DANVA Voices group differences (ADHD vs non ADHD) analysis was also run with Time in Treatment as a covariate in addition to PPVT score with non-significant results [$F(1, 40) = 0.082$, $p = .776$]. This indicates that there were no group differences between children with and without ADHD in terms of their ability to recognize emotions in children's

voices, controlling for their verbal abilities and the amount of time spent in treatment. Again, it is important to emphasize that given the low and poor reliability of the DANVA emotion recognition faces and voices measures, these analyses were run for exploratory purposes.

Hypothesis 2B: ADHD diagnosis predicting poorer emotion regulation and greater emotional lability/negativity. The overall model examining differences on the two emotion regulation measures (Emotion Regulation and Emotion Lability/Negativity) approached significance [$F(1, 40) = 2.926, p = .065$, Wilks' $\lambda = .870$] with between subjects' effects being significant for Emotion Regulation [$F(1, 40) = 5.620, p = .023$] and approaching significance for Emotion Lability/Negativity [$F(1, 40) = 3.573, p = .066$]. This finding suggests that children with ADHD compared to children without this diagnosis differ on these emotion measures. When examining the sample means for each of these variables (see Table 6), children with ADHD tended to have lower emotion regulation scores and greater emotional lability/negativity scores compared to children without this diagnosis. When Time in Treatment was added as a covariate to the model, it was no longer significant [$F(1, 39) = 1.501, p = .236$, Wilks' $\lambda = .927$], indicating that when controlling for time in treatment, the differences in emotion regulation and emotional lability/negativity measures were not observed between these two groups.

Hypothesis 2C: ADHD diagnosis predicting poorer social competence. Next, social competence (Parent Report of Social Skills and Child Perceived Social Competence) were examined for potential group differences. The overall model examining differences on the two social competence measures was not significant [$F(1, 40) = 1.322, p = .278$, Wilks' $\lambda = .937$], suggesting that children with ADHD did not significantly differ from children without ADHD in terms of their self or parent reported social skills.

Differential Impact of Stress on Children with ADHD Compared to Other Problems

Hypothesis 3: Stress having a greater negative impact on children with ADHD compared to children without this diagnosis in terms of social-emotional competence.

ANCOVA was used to assess whether there was a differential impact of stress affecting children with ADHD compared to those without an ADHD diagnosis on social-emotional outcomes. Given that the only outcome measure that approached a significant relation to Child Stress was Emotional Lability/Negativity, only one ANCOVA was run with this variable as the criterion, ADHD diagnosis as the predictor, and Child Stress as a covariate. The model was not significant [$F(1, 39) = 2.476, p = .124$] indicating no differential effect of stress was found when comparing children with ADHD to those without ADHD in terms of their emotional lability/negativity. Given the lack of significant findings, Time in Treatment was not examined as a potential additional covariate.

Child Stress and Parent Self-Efficacy

Hypothesis 4: Parent self-efficacy will serve as a moderator in the relation between child stress and social-emotional competence outcomes. Parent Self-Efficacy was examined as a potential moderator for the relation between Child Stress and social-emotional competence, using the method described by Baron & Kenny (1986). Again, given that the only outcome measure that approached a significant relation to Child Stress was Emotional Lability/Negativity, only one set of analyses was run. The moderator variable, Parent Self-Efficacy, was categorized into three groups based on scoring criteria provided by the authors (low, moderate, and high) and used for subsequent analyses. Results showed that Child Stress was significantly related to Parent Self-Efficacy ($r = -.471, b = -.437, p = .005$), however, it was not significant as a moderator of the relation between Child Stress and Emotional Lability/Negativity ($R^2 = .266, b = -.009, p = .950$). This indicates that the greater amounts of stress parents reported that their child experienced, the

lower parent self-efficacy parents reported. The moderator analysis revealed that parent self-efficacy was not a buffer for the potential negative impact of stress on children's emotional lability/negativity, as predicted. Given the lack of significant findings, Time in Treatment was not examined as a potential covariate in this model.

CHAPTER 4

Discussion

Impact of ADHD Diagnosis on Emotion Regulation and Lability/Negativity

Results indicated that children with an ADHD diagnosis had significantly lower scores on the parent report of adaptive emotion regulation. This is consistent with previous research demonstrating difficulties for children with ADHD in this domain compared to their non-diagnosed peers (Musser et al., 2011; Walcott & Landau, 2004). The current study extends these findings in that children with ADHD were shown to have lower emotion regulation scores compared to children with other clinical problems. Also, the current sample was a clinical sample of primarily urban, African American, low income children, uniquely extending previous related findings to apply to the current population. Similarly, there was an indication that children with ADHD had greater emotional lability/negativity ratings by parents compared to those children without this diagnosis. Children with externalizing problems, including ADHD, have shown greater negative emotions in response to peer praise compared to children without this diagnosis (Casey & Schlosser, 1994). Although not directly measured in the current study, these deficits are theorized to be related to the general self-regulation deficits in children with this disorder, often seen in other areas such as general impulsivity and difficulties sustaining attention (Barkley, 2006). When time in treatment was added as a covariate to this model, the relations between ADHD diagnosis and emotion regulation and lability/negativity were no longer significant. Children who were in treatment for longer periods of time tended to have poorer outcomes (i.e. lower emotion regulation scores and higher emotional lability/negativity). Given the direction of the finding, this could suggest that having greater severity of psychopathology, reflected in greater involvement in

treatment, better accounts for the greater emotion dysregulation and poorer adaptive emotion regulation abilities as opposed to whether children have an ADHD diagnosis or not.

Impact of Child Stress on Emotional Lability/Negativity

Data showed a nearly significant relation between parent report of child stress and emotional lability/negativity in children. This could suggest that greater exposure to stressful or adverse events in childhood results in more immediate term difficulties with emotion dysregulation. This is consistent with previous research indicating the negative impact stress has on children's self-regulatory capacities in general (Blair, 2010; Evans et al., 2005; Evans & Kim, 2007) as well as the greater emotion dysregulation seen in maltreated children, who have experienced a specific type of traumatic stress (Cicchetti & Toth, 2005; Kim-Spoon, Cicchetti, & Rogosch, 2013). Although this finding did not reach customary levels of significance, future studies consistent with this notion could illustrate that accumulation of multiple stressful life events impacts children's emotional lability in a clinically referred sample. However, it is important to note that when the time spent in treatment was included in the model, the relation between child stress and emotional lability/negativity was not significant. This could suggest that after considering the impact of severity of psychopathology on emotion dysregulation, reflected in greater involvement in treatment, children's stress exposure would not have significant predictive power.

Impact of Child Stress on Parent Self-Efficacy

Parent self-efficacy was tested as a potential moderator variable, or buffer, in the relation between child stress and emotional lability/negativity. Results showed a significant inverse relation between parent self-efficacy and child stress with a medium to large effect. This could indicate that greater exposure to stressful events experienced by children is associated with

decreased parental report of their satisfaction with and confidence in their parenting skills. Researchers have argued that there is an inter-related nature between the stress that parents experience and the stress that children experience (Compas, Howell, Phares, Williams, & Ledoux, 1989). In the current sample, 43% of parents endorsed experiencing a physical assault and 35% endorsed experiencing a sexual assault. Some studies have shown a link between parent report of their own stress and parent self-efficacy (Jones & Prinz, 2005; Reece & Harkless, 1998), therefore, given the high rates of stressful events parents reported experiencing themselves, parental stress could account for the lower parent self-efficacy observed. Several studies have framed this phenomenon as “intergenerational trauma,” with much of the research in this area being done with native/aboriginal people (Bombay, Matheson, & Anisman, 2009; Evans-Campbell, 2008; Menzies, 2006) and to a lesser extent on urban, low income families who are also at greater risk for experiencing stressful and traumatic events (Evans, 2004). Furthermore, it could be that it is more difficult to parent a child that has experienced multiple stressful life events, and therefore, this leads to decreased confidence in parenting skills. However, it is important to note that one analysis that tested this notion did not return significant results, as parent self-efficacy was not a moderator in the relation between child stress and emotional lability/negativity. More research is needed to further elucidate the link between parent stress, child stress, and parent self-efficacy.

Other Findings

Children’s ability to recognize emotions in voices showed a significant positive correlation with receptive verbal abilities. Verbal abilities have a strong relation to overall intelligence (Hodapp & Gerken, 1999) so this could indicate that the voice emotion recognition task was easier for children with higher intelligence. It could be due to the fact that interpreting one’s emotional state simply by hearing their voice is difficult and not something that is often encountered in the

natural social environment, so children who are generally more intelligent would have a greater advantage in terms of learning this skill. An important caveat to these conclusions is that the emotion recognition in voices measure had very poor reliability such that findings may not even be interpretable. Analyses with this variable were run simply for exploratory purposes.

There was a significant negative relation between the time children had been in treatment as it relates to their ability to label accurately the emotions heard in children's voices. This may suggest that children who have been in treatment for longer periods of time, and likely have more severe psychopathology, tend to have greater difficulty identifying emotions in others' voices. These findings were interpreted as time in treatment being an indicator of severity of symptoms. For children with ADHD in particular, greater symptom severity is associated with more deficits in emotional competence (Sobanski, et al., 2010). Logically, children who have more significant problems are more likely to need intensive treatments and therefore, stay in treatment for longer amounts of time. Again, for the relation with emotion recognition in voices, this association should be interpreted with caution given the poor reliability of the measure.

There was also a negative relation between children's time in treatment and their adaptive emotion regulation as well as a positive relation with emotional lability/negativity. Greater time in treatment was associated with poorer adaptive emotion regulation and greater emotional lability/negativity. As with the other previously noted associations, time in treatment could be functioning as an indicator of symptom severity, reflected in greater impairment in these emotion domains.

Null Findings

A few hypotheses were tested and not supported in the current study. Parent and child report of social skills did not appear to have a significant relation to children's experience of

stressful events. However, there was indication that stress could be affecting children's emotional lability, which has been associated with negative peer interactions (Eisenberg, Fabes, Bernzweig, Karbon, Poulin, & Hanish, 1993). Given the interconnectedness between emotional competence and social competence (Saarni et al., 2006), it may be possible that social deficits caused by stress are seen further along children's developmental trajectory. Children's negative emotionality in turn likely impacts their interaction with peers, thus potentially providing less opportunity for positive reinforcement of good social skills. Peers may be less likely to play with or spend time with children who express a high degree of negative emotionality which, over time, could isolate a child from their peers. The impact of stress on negative emotionality that could in turn impact peer relationships may not be seen until later in life, if it exist. Follow up on these youth is needed.

Children's ability to recognize emotional expression in a series of children's faces and voices were not related to children's experience of stress. This could indicate that stress generally does not have an immediate or moderate-term effect on children's emotion recognition abilities. It is possible that over time, repeated exposure to stressful events could show these deficits in adolescence or adulthood. Also, it should be noted the reliability for the measures of emotion recognition in faces and voices were low and poor, respectively. Given that the voices recognition measure had particularly poor reliability, analyses that included this variable were done as exploratory analyses. Perhaps alternative measures of emotion recognition would more accurately capture children's abilities in this domain.

ADHD diagnosis was not related to children's social skills. Previous findings have shown that, in general, children with ADHD tend to have poorer social skills than those without this diagnosis (Bagwell et al., 2001; Gentschel & McLaughlin, 2000). However, the distinction between children with ADHD and children with other clinical problems, as examined in this study,

is not as clear. Children with other clinical problems such as depression (Cole, Martin, Powers, & Truglio, 1996) and anxiety disorders (Crawford & Manassis, 2011) have also been shown to have social deficits. The social deficits in children with other clinical problems may be similar to those seen in children with ADHD. Lastly, stress did not show a differential effect on emotional negativity/lability for children with ADHD compared to those with other clinical problems. Again, as discussed with other potential effects of stress on social-emotional competence, it is possible that differences will become apparent over the course of development and may not be readily recognizable during middle childhood.

Limitations

Power. The sample size of $N = 42$ fell below the projected need for $N = 55$ to conduct most of the analyses with adequate power. The lower sample size was due to difficulty recruiting eligible participants within the age range at recruitment sites. In particular, recruitment at the pediatric primary care clinic was much more limited than anticipated given some institutional difficulties with getting research assistants approved to conduct on-site recruitment. Also at this site, there were simply fewer children meeting inclusion criteria that researchers had access to recruiting than anticipated. Therefore, inadequate power could account for the lack of significant findings, and in particular the fact that two of the study findings approached but did not reach customary levels considered to be statistically significant (i.e. $p < .05$).

Measurement of social-emotional competence. Given the complex and dynamic nature of social-emotional competence (Saarni, et al., 2006), measurement of the construct with the tools used in the current study is a potential limitation. Due to pragmatic limitations, this project did not attempt to assess all of the components that are considered to comprise competence in these domains. Rather, a smaller set of the key components were selected, presumed to be very

important, observable, and frequently needed in the context of childhood. The presentation of pictures of faces and recordings of voices are the methods by which emotion identification was measured in the current study. However, in reality, children have much richer information on which to base identification of other children's emotion, including their personal history with the child and other important clues such as facial movement, physical gestures, and environmental context; these were absent in the current study. Furthermore, the reliability of the emotion recognition measures were low, and therefore, likely not interpretable in the current study. Although these measures have demonstrated good reliability with children generally (Nowicki & Duke, 1994; Rothman & Nowicki, 2004) as well as in a clinical child sample (Cooley & Triemer, 2002), perhaps the measure was not appropriate for the current sample, which was primarily low-income and African American. Although there was some diversity in the pictures of children's faces in the DANVA measure, faces were mostly of White children. This measure in particular may not be the best way to assess this aspect of emotional competence in youth growing up in a setting in which they are interacting primarily with African American and other minority youth.

Clinical participants. Another limitation to the current study is the comparison of children with ADHD to all other clinically referred children, absent of other distinctions. There could be important differences in social-emotional competence among children with different clinical presentation (e.g. anxiety vs. depression vs. ADHD), which were not captured using the current study methods. The role of comorbidity and its potential impact on children's social-emotional competence was also not taken into account. It is possible that youth with comorbid conditions could have greater difficulty with social and emotional competence. Although all participating children were identified in terms of their clinical diagnoses, there was not enough statistical power to compare children with specific non-ADHD diagnoses to children with diagnoses of ADHD.

Given the sample sizes of children with other types of problems seen in the current study, this more granular analysis could not be conducted.

Stress Measurement. The current study examined children's experience of a series of negative life events as a primary independent variable. These events were reported by parents or primary caregivers, who may have been influenced by their own experience of stress when reporting on their child's stress. Furthermore, parents may not be aware of all of the various stressful events that their child has experienced and therefore may be under-reporting. Stressful events included broad categories of family turmoil, poverty, family separation/social services, family illness/injury, and unsafe/neighborhood violence. Maltreatment, including physical abuse, sexual abuse, and neglect, were not included on the list of stressful events. Authors of the original measure noted that they believed these instances were too "sensitive" for inclusion in a checklist form and that they warranted another form of assessment, thus they were not included in the checklist (Work, et al., 1990). The fact that these events were left out of the checklist indicate that these important negative life circumstances were not captured in the current study, at least in terms of their relation to social-emotional competence outcomes.

Given the fact that items from the checklist were specific events that children could experience, they did not include broader psychosocial risk factors such as coming from a single parent household, maternal mental illness, and socioeconomic status. A separate but related cumulative risk model used to examine impact of contextual factors on development often includes these broad risk factors as well as some specific, individual level negative events (e.g. maltreatment, interpersonal conflict, witnessing neighborhood violence) (Evans, Li, & Whipple, 2013). The cumulative risk model has demonstrated robust effects on child psychosocial outcomes including greater levels of general distress, poorer self-regulation, elevated physiological measures

of stress (see Evans & English, 2002 for a review). The cumulative risk model, at least in some cases, may better account for environmental level variables and their impact on child development. Further supporting the cumulative risk index, there is some evidence to suggest a linear additive model of contextual risks as they relate to child outcomes, as opposed to a threshold model, is more robust at predicting child developmental outcomes (Appleyard, Egeland, van Dulman, & Sroufe, 2005). However, others have argued that this is not the case, for example, in terms of the impact of cumulative risk on children's cognitive development (Burchinal, Roberts, Hooper, & Zeisel, 2000). That is, these authors suggest that cumulative models of risk may be more appropriate to predict developmental pathways or trajectories whereas examining discrete or individual events or types of stress may be better suited for predicting specific outcomes at a given time in development.

It may also be that case that a more specialized analysis based on different types of stress experienced by children (i.e. examining maltreatment, neighborhood violence, family turmoil, etc.) separately would yield a more accurate, specific understanding of environmental contributors to social and emotional competence. There may be differences in effects based on type of stressful event, such as relational stress compared to more distal environmental stress (e.g. hearing gunshots in your neighborhood). Furthermore, the current study did not address the distinction between stress as an indicator of risk vs. the actual mechanisms that results in disrupted functioning (Rutter, 1996). In this case, the theorized mechanism was a self-regulation deficit (Evans et al., 2005), although it was not measured directly.

Other Issues. In addition, the parent-report of social skills may not be the most accurate reflection of children's actual social skills, as children's teachers often have greater exposure to a child's behavior in social contexts than parents do. Also, teachers could have greater awareness

of the range of social behavior of children and thus have a better sense of how an individual child compares to their same age peers in this domain. However, tapping teacher reports has been problematic in both of these clinic settings, given the large metropolitan area that children are drawn from, with many school districts and lack of stability of teachers in the areas serving the children who are potential participants.

The use of chart review to determine child diagnoses could also have been problematic. Clinicians use a variety of methods to determine what diagnoses to give to a child. Diagnoses in the current study were made primarily by child psychiatrists, followed by psychologists/psychology trainees, and lastly by pediatricians. Using a single, standardized method such as diagnostic interview would have reduced variability in diagnostic methods and increased reliability of diagnostic classifications. However, it was determined not to be feasible for the current study given the time-consuming nature of completing diagnostic interviews for all possible mental health diagnoses.

Also, the relationship of the caregiver completing forms to the child participant was not recorded. There could be variability of caregiver report based on their relationship with the child (e.g. mother, father, grandmother, nonrelative guardian, etc.) This information was not captured in the current study. Furthermore, given that caregivers reported on both child stress and several of the social and emotional competencies, including children's emotion regulation, emotional lability/negativity and parent self-efficacy, the findings showing a significant relation between child stress and these variables could be due to shared methods variance, thus being spuriously inflated.

Recommendations/Future Directions

Future studies may want to consider using a wider age range, particularly when conducting cross-sectional research. It may have been sufficient to include a larger age range of individuals and examine age as a potential covariate in an effort to increase power. However, in doing this, an even greater sample size would be needed to detect age cohort effects, if any exist, whereas limiting the age range leads to greater understanding of any age specific effects. In terms of measurement of emotion recognition, other measures need to be developed that are more appropriate for study in populations of low-income, ethnic minority youth. This could mean inclusion of more diverse children's faces and voices in the stimuli presented to youth when asked to identify a specific emotion. Also, other methods such as vignettes or stories that provide somewhat richer contextual information may be helpful, as children use several factors to determine emotional experience of others in real-life situations, as opposed to simply facial expression and tone of voice. As for clinical diagnoses, future researchers may want to use diagnostic interviews to ensure accuracy of diagnosis. Rather than completing an entire diagnostic interview assessing for all possible mental health diagnoses, researchers could select a few specific clinical problems of interest and assess for those. This could help balance the timeliness issue of completing a full diagnostic interview with the aim of reliability and consistency of diagnostic methods.

In terms of measurement of stressful life experiences in children, perhaps using other methods to examine stressful life events may be more useful in looking at their relation to social and emotional outcomes. Children's self-report of stressful life events could also be useful to assess. Furthermore, taking into account the level of distress associated with specific events could be helpful, in that some children may find a given experience more distressing than others and in

turn show greater effects on psychosocial outcomes. Also examining more distal factors (e.g. poverty, maternal mental illness) in addition to specific events (e.g. witnessing violence) as is done in the cumulative risk model for contextual stress previously described, could shed some additional light onto the impact of broader context on specific social and emotional outcomes. Looking at other mechanistic variables such as physiological measures of stress (e.g. respiratory sinus arrhythmia, allostatic load, heart rate, blood pressure) could be helpful in elucidating the relation between children's experiences of stressful events and their impact on important psychosocial outcomes.

Lastly, longitudinal studies that examine the effects of stress over time in childhood are needed. Specifically, findings from the current study could suggest that stress has a more immediate term effect on children's emotional dysregulation and it is possible that this specific deficit could lead to other problems later in development, such as greater social difficulties. Examining the impact of stress on social skills over time could be worthwhile in that impact of stress on this domain of functioning may have a delayed effect. Furthermore, examining any age cohort effects of stress on social and emotional outcomes more generally is needed to determine if experiencing stressful events at particular times in development leads to specific types of problems in social-emotional competence.

Strengths of the Current Study and Clinical Implications

This study is one of the rare studies looking at the accumulation of adverse or stressful experiences in a clinical population and potential effects on social-emotional outcomes. Multi-method and multi-informant assessments were used, including parent report, child self-report, and operant measures, which is another strength of the study. Furthermore, current research emphasizes the importance of examining other negative experiences beyond ones that are more

commonly studied (e.g. abuse, neglect) especially for low income, urban youth. In particular, these youth likely experience unique stressful events that youth living in other circumstances may not (Cronholm et al., 2015). These unique events are important to account for in terms of measuring their potential impact on psychosocial functioning. Also, examining differential impact of stress on children with various clinical problems is also rare. Although no differences were found in the current study, perhaps a more refined look comparing more clusters of disorder (depression, anxiety, ADHD) could demonstrate differences. As for clinical implications, the results of the current study provide further evidence for the importance of consideration of social-emotional variables in treatment of child psychopathology. As previously noted, social-emotional competence is not well integrated into treatment literature despite being important aspects of child development (Southam-Garrow & Kendall, 2002). Clinicians have further evidence and support for assessing problems with emotional negativity/lability in children with ADHD as well as children who have experienced stressful life events. In addition, this study supports the notion of examining parenting factors in terms of their relation to children's mental health, as higher parent report of child stress was associated with lower parenting confidence. Continued research in this domain is needed as well as greater incorporation of social-emotional competence into treatment outcome studies.

APPENDIX A

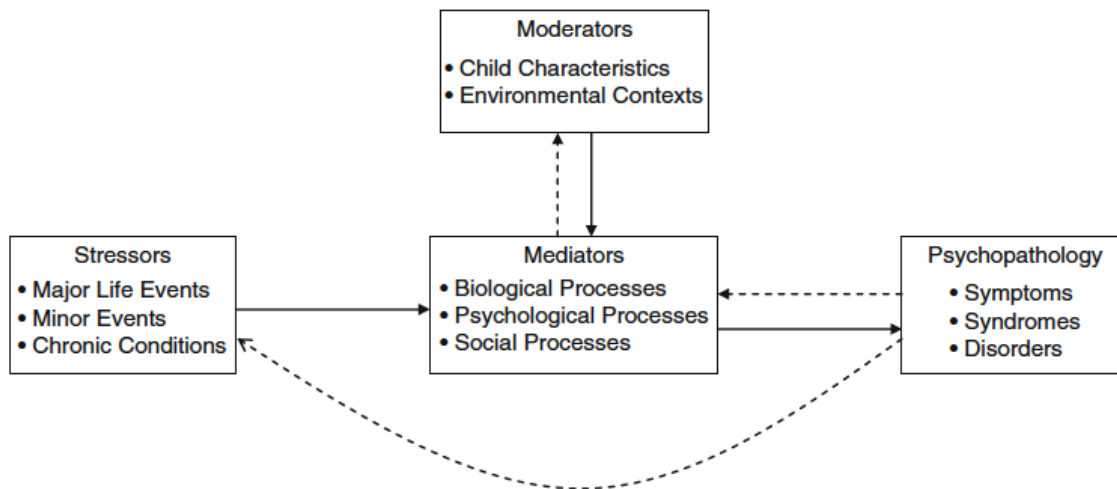


Figure 1. Grant and Colleagues (2014) Stress Model

Table 1.

Brief Description of the Eight Social-Emotional Competencies

#	Skill Description
<hr/>	
1	Awareness of one's own emotional state
2	Discerning emotional states of others
3	Emotional expression
4	Sympathy and empathy
5	Correspondence of internal emotional state and external expression in self and others
6	Adaptive coping with aversive emotions, including emotion regulation
7	Emotion sharing in relationships
8	Emotional self-efficacy; accepting one's own emotional experience

Taken from: Saarni, C., Campos, J. J., Camras, L. A., & Witherington, D. (2006). Emotional development: Action, communication, and understanding. In W. Damon & R. M. Lerner (Series Eds.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional and personality development* (6th ed., pp. 226–299). New York: Wiley.

Table 2.

Demographics of Sample

Variable	% of Sample	N
Ethnicity		
Black/African American	78.6	33
White/Caucasian	11.9	5
Arab/Middle Eastern	2.4	1
Biracial/Multiracial	7.1	3
Sex		
Male	64.3	27
Female	35.7	15
Site		
Community Mental Health	71.4	30
Psychology Training Clinic	21.4	9
Pediatric Primary Care	7.2	3
Taking Psychiatric Medication	64	27
In Therapy	62	26
Free or Reduced Lunch	76.2	32
Medicaid	78.6	33

Note: Total for study = 42

Table 3.

Key Study Variables

Variable Name	Description	Data Source
Child Stress	Total items endorsed on the Life Events and Circumstances Checklist (LECC; Work, Cowen, Parker, & Wyman, 1990)	Parent
Child Diagnosis	Diagnosis from site clinician (i.e., psychologist, psychiatrist, therapist) recorded via chart review and subsequently categorized as either having an ADHD diagnosis or not	Chart Review
Emotion Recognition- Faces	Total number of accurate responses in identifying emotions of child faces presented in the Diagnostic Analysis of Nonverbal Accuracy 2 (DANVA 2; Nowicki & Duke, 1994)	Child
Emotion Recognition-Voices	Total number of accurate responses in identifying emotions of child voices presented in the Diagnostic Analysis of Nonverbal Accuracy 2 (DANVA 2; Nowicki & Duke, 1994)	Child
Emotion Regulation	Total adaptive emotion regulation scale score on the Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997)	Parent
Emotional Lability/Negativity	Total emotional lability/negativity scale score on the Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997)	Parent
Perceived Social Competence	Social subscale score on the Children's Self-Perception Profile (Harter, 2012)	Child
Social Skills	Total Social Skills scale score from the Social Skills Improvement System	Parent

(SSIS) Rating Scale (Gresham & Elliott, 2008)

Parent Self-Efficacy	Total score on the Parenting Sense of Competence Scale (PSOC; Johnston & Mash, 1989)	Parent
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Table 4

Key Study Variables Correlated with Potential Covariates

Variable	Covariate	Correlation (<i>r</i>)	<i>p</i> value
<i>PPVT Score</i>			
Emotion Recognition Voices		.502	.001
<i>Time in Treatment</i>			
Emotion Recognition Voices		-.337	.029
Emotion Regulation		-.395	.010
Emotional Lability/ Negativity		.337	.029

Table 5.

Noteworthy Analysis Results

Independent Variable	Dependent Variable	Statistic	<i>p</i> value
Child Stress	Emotional Lability/Negativity	$R^2 = .082$.066
Child Stress	Parent Self-Efficacy	$r = -.471$.005
ADHD Diagnosis	Emotion Regulation	$F = 5.620$.023
ADHD Diagnosis	Emotion Lability/Negativity	$F = 3.573$.066

Note: The Child Stress and Parent Self-Efficacy statistic is a correlation, and therefore, does not differentiate between IV or DV.

Table 6.

Means and Standard Deviations for Noteworthy Study Variables

Variable	Overall Mean (SD)	ADHD Group Mean (SD)	Non-ADHD Group Mean (SD)
Child Stress	8.3 (5.8)	9.1 (6.1)	6.7 (4.9)
Parent Self-Efficacy	67.6 (11.4)	66.8 (11.2)	69.2 (12.1)
Emotional Lability/Negativity	29.2 (8.6)	30.5 (8.6)	25.6 (7.7)
Emotion Regulation	27.4 (5.1)	26.2 (5.0)	29.9 (4.6)

APPENDIX B

BACKGROUND QUESTIONNAIRE

Participant ID# (to be completed by research staff): _____

Today's Date: _____

Child's date of birth: _____

Child's race/ethnicity: _____

Is your child's biological sex male or female?: _____

Including yourself, please list everyone that lives in your home and their ages. DO NOT use names, only indicate their relationship to your child and their age (e.g. Mother 31, sister 5, cousin 17, etc.)

What mental health problems has your child been diagnosed with [e.g. Attention-Deficit/Hyperactivity Disorder (ADHD), Oppositional Defiant Disorder (ODD), Post Traumatic Stress Disorder (PTSD), depression, anxiety]? Please give **diagnoses** and **date (month and year) when was your child first diagnosed** with the problem.

What physical health problems does your child have (e.g. asthma, allergies)?

Does your child take medication for ADHD or any other mental health problem? If so, please give the **names and doses of the medicine** and the **date your child first started taking medication (month and year)**.

Does your child see a therapist for ADHD or other problems? If yes, please give the **date your child first started seeing a therapist (month and year)** and about **how many times per month** they see the therapist.

What is your employment status (select one)?

- ☐ Employed part-time
- ☐ Employed full-time
- ☐ Unemployed
- ☐ Student
- ☐ Retired

What is your annual household income (select one)?

- ☐ Less than \$8,000 per year
- ☐ Between \$8,001 - \$12,000 per year
- ☐ Between \$12,001 - \$15,000 per year
- ☐ Between \$15,001 - \$20,000 per year
- ☐ Between \$20,001 - \$30,000 per year
- ☐ Between \$30,001 - \$50,000 per year
- ☐ Greater than \$50,000 per year

Does your child receive free or reduced lunch at school (circle one):

Yes or No

Does your child have insurance through Medicaid (circle one):

Yes or No

If no, what kind of health insurance do they have? _____

Have you or another parent/guardian ever had mental health problems? If so, please describe.

Has anyone else in your family besides your child participating in this study had mental health problems? If so, please describe.

CHART REVIEW

Today's Date: _____

Last Date Seen: _____

Participant Study ID#: _____

Participant Site ID#: _____

Participant home zip code + 4 digits: _____

Child's date of birth: _____

Child's race/ethnicity: _____

Male or Female (circle one)

List all mental health diagnoses:

List mental health treatment history, including beginning and ending dates:

List any mental health treatment history that has occurred since last being seen including beginning and ending dates:

List medication history including dose and beginning and end dates:

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ABSTRACT**THE IMPACT OF STRESS ON SOCIAL-EMOTIONAL COMPETENCE IN
CLINICALLY REFERRED CHILDREN**

by

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Stress negatively impacts children's mental health. Specifically, most research has demonstrated an association between greater stress and greater psychological symptoms (e.g., depression, anxiety, aggression). Less is known about whether stress impacts children's social-emotional competence, important aspects of healthy development. Children with mental health problems are more likely to have deficits in emotion understanding and emotion regulation than typically developing children. In particular, children with ADHD are likely to have more significant social-emotional problems than their peers with other clinical problems (e.g. depressed children). Parenting confidence could reduce the potential negative effects of stress on social-emotional competence. The current study examined the impact of stress on social-emotional competence in children referred to mental health services. It also sought to determine whether the impact of stress on social-emotional competence is particularly pronounced for children with ADHD. Lastly, it examined whether parenting confidence can serve as a buffer to the possible negative effects of stress on these outcomes. Results indicated that children with ADHD tended to have lower adaptive emotion regulation skills, per parent report. There was also some evidence to suggest that children with ADHD showed greater emotional negativity/lability. Greater parent

report of children's experience of stressful events was associated with lower report of parenting confidence. There was also an indication that children's experience of stress was associated with greater emotional negativity/lability. This research supports the importance of consideration of social-emotional competence in clinical child populations as well as the potential impact stress can have on children's ability to cope with emotions.

AUTOBIOGRAPHICAL STATEMENT

The author was born in Rockford, IL on December 5, 1987. He graduated from Boylan Catholic High School in Rockford, IL in May 2006. He attended Loyola University Chicago where he earned a Bachelor of Science degree in Psychology in May 2010. He earned a Master of Arts in Clinical Psychology from Wayne State University in Detroit, MI in December 2014. He completed his predoctoral internship at the University of Minnesota Medical School, Department of Pediatrics.